

In the Claims

Please amend claims 1, 3, 4, 7, and 15 and add new claims 19-29, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): A printed wiring board comprising an odd number n of conductive layers which are built up via a same odd number of insulating layers respectively and are electrically connected to one another via ~~interconnecting~~ through holes;

wherein the first conductive layer is a layer on which an electronic component is to be mounted and which conducts electric currents in and out of the electronic component; an n -th conductive layer is an external connecting layer for connecting external connecting terminals which conduct electric currents in and out of the printed wiring board; a second to $(n-1)$ -th conductive layers are current transmitting layers for transmitting internal currents of the printed wiring board; each of said first to $(n-1)$ -th insulating layers has at least one of the through holes with a plating film formed on a wall of the at least one through hole to connect the conductive layers; and a surface of the n -th conductive layer is covered with an n -th and outermost insulating layer with external connecting terminals being exposed, and wherein a central insulating layer of the odd number of insulating layers prevents warping from occurring in the ~~printing~~ printed wiring board.

2. (Original) The printing wiring board according to Claim 1, wherein the external connecting terminals are solder balls.

3. (Currently amended) A method of manufacturing a printed wiring board having an odd number n of conductive layers which are built up with a same odd

number of insulating layers respectively and are electrically connected to one another by first interconnecting through holes, the method comprising the steps of:

interposing the insulating layers between a second to n-th conductive layers respectively and also forming first interconnecting through holes for electrically connecting the conductive layers to one another;

laminating a first prepreg and a copper foil on a surface of the second conductive layer, ~~and press-bonding~~ laminating a second prepreg on a surface of the n-th conductive layer, and simultaneously press-bonding the first and second prepregs, the copper foil, the second to n-th conductive layers, and the insulating layers to form a multilayer substrate having an odd number n of insulating layers, wherein the second to n-th conductive layers are internal layers of the multilayer substrate;

etching the copper foil to form a first conductive layer;

forming second interconnecting through holes in a first insulating layer and forming connecting holes in an n-th insulating layer respectively;

forming a metal plating film for electrically connecting the first conductive layer with a second conductive layer on the walls of the second interconnecting through holes of the first insulating layer; and

connecting external connecting terminals to a surface of the n-th conductive layer exposed through the first connecting through holes of the n-th insulating layer.

4. (Currently amended) A printed wiring board comprises an internal insulating substrate having a conductor circuit formed on a surface thereof, an internal insulating layer laminated on the surface of the internal insulating substrate, and an external insulating layer laminated on a surface of the internal insulating layer, the internal insulating layer and the external insulating layer having an internal conductor circuit and an external conductor circuit respectively;

wherein the internal insulating layer comprising two or more internal insulating layers of glass cloth-reinforced prepreg containing 30 to 70 % by weight of glass cloth, and wherein the external insulating layer comprises synthetic resins and inorganic fillers or synthetic resin single substances.

5-6. (Cancelled)

7. (Currently amended) A method of manufacturing a printed wiring board having a plurality of conductive layers which are built up via insulating layers respectively and are electrically connected to one another by interconnecting through holes, the method comprising the steps of:

forming conductive layers on a plurality of insulating layers respectively, wherein each of the insulating layers is selected from a group comprising resin base materials containing a single synthetic resin substance, resin base materials containing synthetic resins and inorganic fillers, and cloth base materials containing synthetic resins and inorganic cloth;

laminating and press-bonding the resulting insulating layers to form a multilayer substrate;

irradiating a laser beam on the multilayer substrate at interconnecting through hole-forming portions to define interconnecting through holes with bottoms defined by the conductive layers;

covering the walls of the interconnecting through holes with metal plating films;
and

fusing solder balls against the interconnecting through holes and filling them with solder.

8-9. (Cancelled)

10. (Previously presented) The method of manufacturing a printed wiring board according to Claim 7, wherein the insulating layers are flexible films made of a glass fiber-reinforced resin.

11-14. (Cancelled)

15. (Currently amended) A printed wiring board comprising:
an insulating substrate having at least one interconnecting through hole penetrating the insulating substrate;
an annular pad disposed along a peripheral edge of a first opening of the interconnecting through hole so as not to cover the first opening;
a covering pad covering a second opening of the interconnecting through hole;
a conductor circuit connected to the covering pad;
a metal plating film electrically connecting the annular pad and the covering pad, the metal plating film covering a wall of the interconnecting through hole and the bottom of the interconnecting through hole defined by the covering pad; and
a solder ball for external connection bonded on a surface of the annular pad at a position offset from the interconnecting through hole.

16-17. (Cancelled)

18. (Previously presented) The printed wiring board according to claim 15, wherein the surface of the insulating substrate is covered with a solder resist.

19. (New) The printed wiring board according to claim 1, wherein the central insulating layer is an $(n+1)/2$ - th insulating layer, and the same number of the conductive layers are provided on the upper side and lower side of the central insulating layer.

20. (New) The printed wiring board according to claim 1, wherein the central insulating layer is an $(n+1)/2$ - th insulating layer, and the central insulating layer has at least two through holes having the same diameter and each connected to another one of the through holes.

21. (New) The printed wiring board according to claim 1, wherein each of the insulating layers is selected from a group comprising epoxy resins, phenol resins, polyimide resins, polybutadiene resins, and fluororesins.

22. (New) The method according to claim 3, wherein the odd number n of insulating layers includes a central insulating layer among the second to n -th insulating layers.

23. (New) The method according to claim 3, wherein the odd number n of insulating layers include a central insulating layer, and the same number of the conductive layers are provided on the upper side and lower side of the central insulating layer.

24. (New) The method according to claim 3, wherein said forming the first interconnecting through holes includes forming at least two interconnecting through holes in a central insulating layer of the odd number of insulating layers that is connected to another one of the first interconnecting through holes or the second interconnecting through hole.

25. (New) The method according to claim 3, wherein each of the insulating layers is selected from a group comprising epoxy resins, phenol resins, polyimide resins, polybutadiene resins, and fluororesins.

26. (New) The method according to claim 7, wherein the inorganic fillers are selected from a group comprising glass short fibers, silica, mica, alumina, and carbon.

27. (New) The method according to claim 7, wherein the cloth base materials are selected from a group comprising glass-fiber cloth, carbon cloth, and aramid cloth.

28. (New) The printed wiring board according to claim 15, wherein the solder ball is located in alignment with the central axis of the interconnecting through hole.

29. (New) The printed wiring board according to claim 15, wherein the solder ball is located at a position offset from the interconnecting through hole.